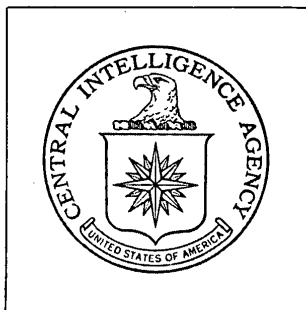


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DIRECTORATE OF
INTELLIGENCE

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

San-ming Nitrogen Fertilizer Complex

(BE Name: San-ming Chemical Plant)

San-ming, China



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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME		COUNTRY	
San-ming Chemical Plant*		CH	
UTM COORDINATES	GEOGRAPHIC COORDINATES	COMIREX NO.	NIETB NO.
50RNE610041	26-15-17N 117-36-30E	None	None
MAP REFERENCE			
15th RTS. USATC, Series 200. Sheet M0498-14HL. 3rd ed. Dec 67. Scale 1:200,000.			
(SECRET)			
LATEST IMAGERY USED		NEGATION DATE (if required)	
		NA	

*The installation name given in the data block is taken from the Basic Encyclopedia. As a result of this study, action has been taken to change the name to San-ming Nitrogen Fertilizer Complex.

ABSTRACT

The primary function of San-ming Nitrogen Fertilizer Complex is the production of calcium cyanamide, ammonium bicarbonate, and probably ammonium nitrate fertilizers. Secondary products include calcium carbide and aqueous/liquid ammonia.

The fertilizer complex appears to have been built in three distinct phases. In September 1963, when the complex was first seen on good-quality photography, the first phase had been completed and facilities for the production of calcium cyanamide were present. Between September 1963 and August 1965 facilities for the production of ammonium bicarbonate fertilizer were added. The probable ammonium nitrate fertilizer plant was under construction in September 1963, but little progress was made through November 1968. The construction pace had increased by December 1969, and the plant was observed complete in February 1972.

The complex was first observed in operation in September 1963. It was in operation on all subsequent coverage with each plant going on stream upon completion.

This report includes a photograph, a process flow chart, a line drawing of the complex, and a chronological summary of construction and operational status.

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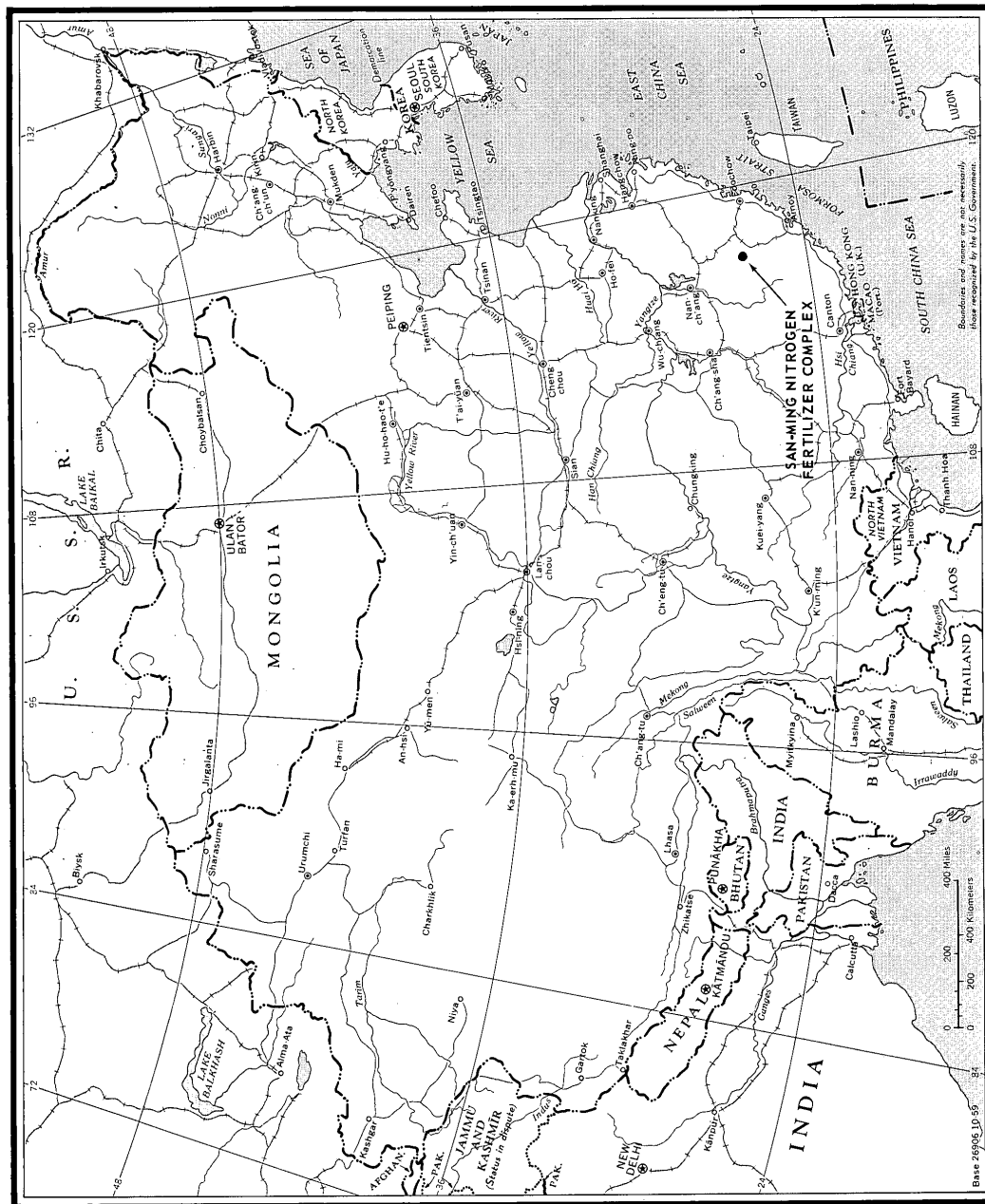
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FIGURE 7. LOCATION MAP.

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INTRODUCTION

San-ming Nitrogen Fertilizer Complex is located in an industrial area near the center of San-ming, Fukien Province (see Figure 1). The fertilizer complex consists of a calcium cyanamide fertilizer plant, a probable ammonium nitrate fertilizer plant, and an ammonium bicarbonate fertilizer plant. Steam and electric power are provided from the collocated San-ming Heat and Thermal Power Plant. The San-ming Iron and Steel Plant is adjacent to the fertilizer complex.

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BASIC DESCRIPTION

The complex is divided into two irregular-shaped areas that cover a total of about 230 acres (see Figures 2 and 3). The calcium cyanamide and ammonium bicarbonate fertilizer plants occupy one area measuring about 1,860 by 2,400 feet. The probable ammonium nitrate fertilizer plant occupies the other area measuring about 3,750 by 2,170 feet. The complex is served by spurs from the Yung-an to Sha-hsien rail line.

Operational Functions

The primary function of the complex is the production of nitrogenous fertilizers--calcium cyanamide, ammonium bicarbonate, and probably ammonium nitrate. 1/ Calcium carbide and liquid/aqueous ammonia are secondary products.

In the calcium cyanamide plant, coke, coal dust, and lime are fused together in an electric furnace to form calcium carbide. This is then heated in ovens in the presence of nitrogen to form calcium cyanamide. Hydrogen and nitrogen for the synthesis of ammonia are obtained from water gas retorts at the other two plants in the complex. In the probable ammonium nitrate fertilizer plant, part of the ammonia is probably oxidized to form nitric acid. This in turn is probably reacted with the remaining ammonia to form ammonium nitrate. At the ammonium bicarbonate plant, carbon dioxide, also produced in the water gas retorts, is mixed with ammonia in the carbonating tower to form ammonium bicarbonate. The process flow for the complex is shown in Figure 4.

Construction Chronology

The fertilizer complex appears to have been built in three phases. The calcium cyanamide plant was complete and operating when the area was first observed on good-quality photography in September 1963. When the complex was next seen, in August 1965, the second phase had been completed with the addition of an ammonium bicarbonate fertilizer plant. A new coal and limestone receiving building and a shipping building were added to the calcium cyanamide plant by August 1965. Since that time, only minor support construction has been observed at these two plants.

The construction of the probable ammonium nitrate plant was much slower. Construction on this plant was first observed in September 1963. At that time the retort building and ammonia synthesis building were under construction and seven support buildings were complete. In August 1965, the gas purification unit was under construction, the ammonia synthesis building remained under construction, and a warehouse had been completed. By November 1968, no additional progress was observed on the ammonia synthesis building, and only minor support buildings were built. By December 1969 the construction pace had increased and the ammonia synthesis building and another warehouse were completed. In February 1972 the plant was complete.

Operational Status

The calcium cyanamide plant was in operation in September 1963 and on all subsequent photographic coverages through February 1972. This was indicated by smoke from the electric furnace building. The ammonium bicarbonate fertilizer plant was first observed in operation in September 1968. It could not be determined if this plant was in operation in January 1967, November 1968, and October 1969 because of the small scale and low resolution of the photography. It was operating in February and December 1969 and in February 1972 as indicated by smoke/vapor from the retort building. The probable ammonium nitrate fertilizer plant was first observed in operation in February 1972, the date of the latest coverage.

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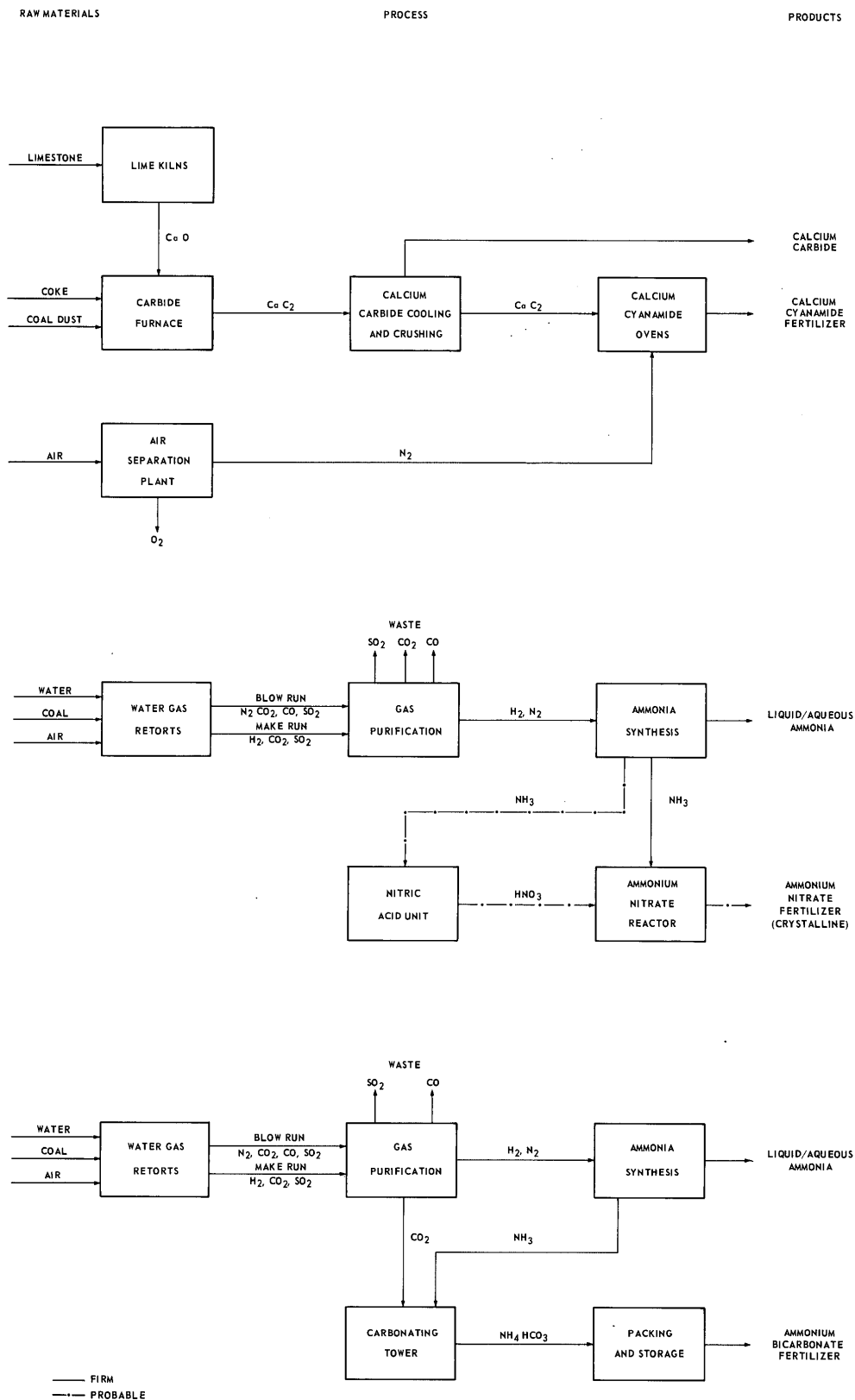


FIGURE 4. PROCESS FLOW AT SAN-MING NITROGEN FERTILIZER COMPLEX.

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REFERENCES

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Map

15th RTS. US Air Target Chart, Series 200, Sheet M0498-14HL, 3rd edition.
December 1967 Scale 1:200,000 (SECRET)

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Document

DOD. [REDACTED], Completion of Large-Scale Synthetic Ammonia Plant at
San-ming Industrial Area, Fukien Province, 30 April 1971 (CONFIDENTIAL)

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Requirement

COMIREX N07
Support Number 428919

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